

Treatment schedule	Temperature (°F)	Pressure	Exposure period (minutes)	Directions
T303-b-2	10 lbs	20	Use 28" vacuum. If without initial vacuum, bleed air until steam vapor escapes. Steam sterilization is not practical for treatment of bales with a density of greater than 30 pounds per cubic foot.
T303-d-2	260	20 lbs	15	
T309-c	250	15 lbs	20	
T406-d	240	10 psi	20	
	140	NAP ¹	60	Use 25 Prime vacuum.
				Steam at NAP, tarpaulin or tent. For treatment enclosures of 4,000 ft ³ or less, the minimum air temperature must be 40 °F. For treatment enclosures greater than 4,000 ft ³ and less than or equal to 6,000 ft ³ , the minimum air temperature must be 60 °F. Treatment is not recommended for treatment enclosures greater than 6,000 ft ³ .
T408-b	250	15 psi	30	Preheat laboratory autoclaves. Restrict soil depth to 2 inches when treating quantities of soil in trays. Restrict each package weight to 5 pounds or less when treating individual packages. Load with adequate spacing. Large commercial steam facilities that operate at pressures up to 60 pounds psi will permit treatment of greater soil depth.
T503-1-3 or T503-2-3 (nonbaled).	240	NAP	10	Introduce live steam into a closed chamber containing the material to be treated until the required temperature and pressure are indicated. The temperature/pressure relationship must be maintained at or above this point for the required exposure period. No initial vacuum is needed, but air must be released until steam escapes.
T503-1-3 or T503-2-3 (baled).	240	10 lbs	20	
T504-1-2, T504-2-2	242	10 lbs	20	
T506-2-3 Loose masses of material.	20 lbs	10	
		15 lbs	15	
		10 lbs	20	
T506-2-3 Closely packed material (such as soil).	Exhaust the air in the chamber to a high vacuum, and then introduce live steam until the required positive pressure is reached.
T510-1	212	Live steam from jet of nozzle into loose masses of material until all parts reach 212 °F.
T518-2-2	260	20 lbs	15	Introduce steam into 28" vacuum.
	250	15 lbs	20	
T519-1	10 lbs	20	
T519-2	259	20 lbs	10	
	240	10 lbs	20	Introduce steam into 28" vacuum (or if without initial vacuum, "bleed" air until steam vapor escapes).

¹ Normal atmospheric pressure.

[70 FR 33269, June 7, 2005, as amended at 70 FR 41092, July 15, 2005]

§305.24 Vapor heat treatment schedules.

(a) *T106-a-1, T106-a-2, T106-a-3, T106-a-4.* (1) The temperature of the fruit pulp must be increased gradually to 110 °F until the center of the fruit reaches that temperature in 8 hours.

(2) The fruit temperature must be held at 110 °F for 6 hours.

(b) *T106-a-1-1.* (1) The temperature of the fruit pulp must be increased to 110 °F until the center of fruit reaches that temperature in 6 hours. During the first 2 hours, the temperature must be increased rapidly. The increase over the next 4 hours must be gradual.

(2) The fruit temperature must be held at 110 °F for 4 hours.

(c) *T106-b-1, T106-b-2, T106-b-3, T106-b-4, T106-b-5, T106-b-6, T106-b-7, T106-b-8.* The temperature of the article must be increased using saturated water vapor at 112 °F until the approximate center of the fruit reaches 112 °F. The fruit temperature must be held at 112 °F for 8.75 hours; then immediately cooled.

(d) *T106-c (Quick run-up).* (1) The temperature of the article must be increased until the approximate center of fruit reaches 117 °F in a time period of at least 4 hours.

(2) During the last hour of treatment, the relative humidity in the chamber

must be maintained at 90 percent or greater.

(e) *T106-d*. (1) The fruit must be sized before treatment. Temperature probes must be placed in the center of the largest fruits. The temperature of the fruit must be increased using saturated water vapor at 117.5 °F until the pulp temperature near the seed reaches 115.7 °F. The pulp temperature must be held at 115.7 °F or above for 30 minutes; then immediately cooled.

(f) *T106-d-1*. (1) The fruit must be sized before the treatment. Temperature probes must be placed in the center of the largest fruits.

(2) The temperature of the fruit must be increased using saturated water vapor at 117.5 °F until the center of the fruit reaches 114.8 °F in a minimum of 4 hours.

(3) The fruit temperature must be maintained at 114.8 °F for 10 minutes.

(g) *T106-e*. (1) Raise temperature of the fruit using saturated water vapor at 116.6 °F until the approximate center of the fruit reaches 114.8 °F within a minimum time period of 4 hours.

(2) Hold fruit temperature at 114.8 °F or above for 20 minutes. If post-treatment cooling is conducted, wait 30 minutes after the treatment to start the forced cooling process.

(h) *T106-f*. (1) The temperature probes must be placed in the approximate cen-

ter of the largest fruits at the seed's surface.

(2) The temperature of the fruit must be increased to 117 °F. The total runup time for all sensors must take at least 60 minutes.

(3) The fruit temperature must be held at 117 °F or above for 20 minutes. During the treatment, the relative humidity must be maintained at 90 percent or greater.

(4) The fruit must be hydrocooled under a cool water spray until the fruit sensors reach ambient temperature.

(5) Inspectors will examine the fruit for live quarantine pests. If pests are found, the inspector will reject the treatment.

(i) *T106-g*. (1) The internal temperature of the fruit must be increased using saturated water vapor until the approximate center of fruit reaches 117 °F in a minimum time of 1 hour or longer.

(2) The fruit temperature must be held at 117 °F or above for 20 minutes. During the treatment, the relative humidity must be maintained at 90 percent or greater.

(j) *T412-b-2*. The commodity must be heated to 212 °F for 15 minutes.

§ 305.25 Dry heat treatment schedules.

Treatment schedule	Temperature (°F)	Time	Directions
T302-a-1-2	168 minimum	At least 2 hours	Spread the ears of corn in single layers on slats or wire shelves.
T303-c-1	212	1 hour.	
T303-d-1	180-200	2 hours.	
T408-a	230-249	16 hours	Spread soil in layers 0.5 inches in depth to ensure uniform heat penetration.
	250-309	2 hours.	
	310-397	30 minutes.	
	380-429	4 minutes.	
	430-450	2 minutes.	
T412-a	248	15 minutes	Start timing when the entire mass reaches 248 °F. ¹
T412-b-1	212	15 minutes.	
T503-1-4, T503-2-4, T504-1-1, T504-2-1.	212	1 hour	Treat small bales only.
T518-1	170	4.5 hours	May take 2 hours to reach temperature.
T518-2-1	180-200	2 hours.	

¹ A minimum of two temperature probes must be placed in the heat treating equipment in order to determine that all niger seed being treated reaches the target temperature. The treatment temperature must be recorded accurately, precisely, and regularly during treatment. The monitoring equipment must be locked before each treatment begins to prevent tampering. Seed processing equipment must have the capability to divert for retreatment any nontreated seeds or treated seeds that do not meet treatment standards.